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WORKING-PLAN REPORT

OF THE

AMBARA RANGE

IN THE

CHHINDWARA DISTRICT

OF THE

SOUTHERN CIRCLE, CENTRAL PROVINCES.

BY

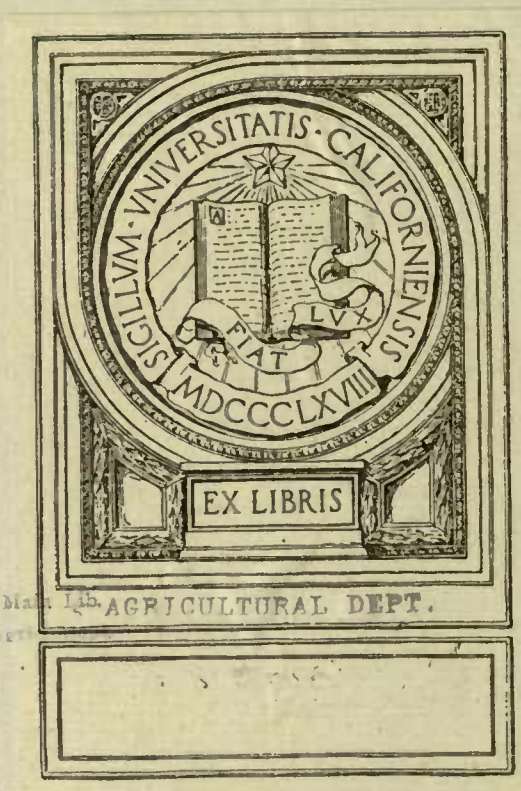
J. A. McKEE, Esq.,

Conservator of Forests, Southern Circle.

Nagpur:

PRINTED AT THE SECRETARIAT PRESS.

1901.



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Extract from the Proceedings of the Officiating Chief Commissioner, Central Provinces, in the Revenue Department, No. 16, *dated Nagpur, the 4th January* 1902.

READ—

Working Plan Report for the forests of the Ambara Range in the Chhindwara Forest Division.

READ ALSO—

Letter No. 133-W. P., dated the 3rd September 1901, from the Inspector-General of Forests, and enclosures.

RESOLUTION.

The plan has the approval of the Inspector-General of Forests and calls for no special remarks. The Officiating Chief Commissioner sanctions its introduction with effect from 1901-02.

ORDER—Ordered that a copy of this Resolution be forwarded to the Government of India, in the Department of Revenue and Agriculture, for information and transmission to the Inspector-General of Forests, and to the officers noted on the margin.

Conservator of Forests, Southern Circle.
Commissioner, Nerbudda Division.
Deputy Commissioner, Chhindwara.
Reporter on Economic Products to the Government of India.

[True Extract.]

H. A. CRUMP,

Chief Secretary to the Chief Commissioner,

Central Provinces.

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No. 133-W. P., dated Simla, the 3rd September 1901.

From—H. C. HILL, Esq., Inspector-General of Forests to the Government of India,

To—The Secretary to the Hon'ble the Chief Commissioner of the Central Provinces, Revenue Department.

With reference to correspondence ending with this office letter No. 184-W. P., dated the 23rd July 1897, I have the honour of forwarding, for the sanction of the Honourable the Chief Commissioner, a revised Working Plan for the forests of the Ambara Range in the Chhindwara District, received from the Conservator of Forests, Southern Circle, under cover of his letter No. 1931 of the 15th instant, a copy of which is appended.

2. A plan for these forests was originally compiled and submitted in 1897; but Mr. McKee, the then Conservator, after personally inspecting the range, brought to notice so many inaccuracies and defects in the plan, that it was decided to frame a new one. The report, as now amended, is not well drawn up and contains several corrections in red ink which were pointed out by this office. A list of some further errors noticed is attached.

3. I do not, however, think that there is any necessity either to re-print the report or to prepare a new plan; but I beg to suggest, with reference to paragraphs 3 and 4 of the Conservator's forwarding letter, that paragraphs 26 and 32 should be revised so as to render their meaning plain.

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ERRATA.

1. *Paragraph* 36.—In the marginal heading "Forecast of condition of crop at the conclusion of fellings" refers to paragraph 37 to which this remark should be added.

2. *Paragraph* 45, *page* 18.—The cost of fire-protecting 102·75 square miles at Rs. 12 per square mile comes to Rs. 1,233 and not Rs. 1,530; the total should be altered accordingly as well as the last three figures against "Net surplus," "Grand total" and "Expenditure under A."

No .1931, dated Nagpur, the 15th August 1901.

From— J. A. McKee, Esq., Conservator of Forests, Southern Circle, Central Provinces,

To—The Inspector-General of Forests to the Government of India.

With reference to your No. 53-W. P., dated 1st May 1901, returning the Working Plan for the Ambara Range in the Chhindwara District, I have the honour to forward the following explanations regarding the various points noticed by you.

2. Working Circle No. I includes 3 working-circles of the old plan, and each of these has been treated as a felling series at the suggestion of Mr. Hearle, late Officiating Conservator of this Circle. This was done in order to reduce the number of working-circles, and to provide produce for purchasers at convenient points over rather a scattered area, and I see no objection to the proposal.

3. Paragraph 26 is not well worded. The Mandwi Block contains 2 coupes to be felled in 1902-03 and 1903-04, respectively, and the Piparpani Block, 3 coupes to be felled in 1918-19, 1919-20, and 1920-21, respectively. Hence working-circle II has 5 coupes. This should have been made clear; but it can be gathered from a perusal of the tabular statement of fellings in paragraph 38.

4. In paragraph 32 it is intended to say, that should there not be a sufficient quantity of 18″ poles at the end of 20 years, as the result of coppicing, for the supply of the market, the balance required can be obtained from the standards which were left at the beginning of the rotation. There was evidently an idea on the part of the framers of this Working Plan that a 20 years' rotation might not be sufficiently long to produce enough 18″ poles.

5. The first sentence of paragraph 34 may be struck out.

6. With regard to paragraph 36 (*c*), the Forest Divisional Officer reports that this was inserted for the guidance of the officials who will have to carry out the fellings, as they are all untrained men; but the words " 60 per cent." should be " 60 per acre." Were there a good demand for the produce, the operation would be coppice with standards; but, like other Working Plans in these Provinces, for areas in which the demand for green fuel is very small, the operation is termed an improvement felling. This, in several instances which have come under my knowledge, I am convinced it is not.

7. Paragraph 39 may be omitted.

8. The typographical errors in paragraphs 41 and 42 have been corrected.

9. I now re-submit, with the above remarks, two corrected plans, and should you, after further consideration, not be disposed to forward it to the Local Government, I would recommend either that the present plan be re-printed, or that Mr. McCrie, who is now Divisional Officer in charge of Chhindwara, be asked to draw up a new plan.

Secretariat Press, Nagpur :— J. E. A., 6-1-1902—75.

No. C-341.

FROM

J. J. HOBDAY, ESQ., B. A.,

FOREST DIVISIONAL OFFICER,

Chhindwara,

TO

THE CONSERVATOR OF FORESTS,

SOUTHERN CIRCLE,

Central Provinces.

Chhindwara, the 16th October 1900.

SIR,

I have the honour to forward a revised Working-Plan Report of the Ambara Range based on the alterations suggested by Mr. J. A. McKee, Conservator of Forests, Southern Circle, Central Provinces, who visited these forests in March 1898.

I have the honour to be,

Sir,

Your most obedient Servant,

J. J. HOBDAY,

Forest Divisional Officer.

Forwarded.

CHHINDWARA:
The 17th October 1900.

R. A. B. CHAPMAN,

Deputy Commissioner.

WORKING-PLAN REPORT OF THE AMBARA RANGE IN THE CHHINDWARA DISTRICT, CENTRAL PROVINCES.

Area 184 Square Miles.

INTRODUCTION.

In 1896 a complete Working-Plan Report for the Ambara Range was compiled, but it was subsequently found that modifications to such an extent were necessary for the proper working of the range that a new plan had to be prepared, based on the proposals submitted in Conservator of Forests, Southern Circle, Central Provinces, letter No. 4145, dated the 19th March 1899, to the Inspector-General of Forests. These modifications are embodied in the present report.

A reference to the accompanying map will show that the Ambara Range adjoins the Sillewanighat and Umreth Ranges and occupies the south-west corner of the district.

The local demand is confined to the eastern portion of the range, particularly those areas near the Nagpur-Chhindwara road. The plan has been arranged to meet this demand.

The major part of the data for the plan has been collected by Mr. McKee, Conservator, and by Mr. Hobday, Forest Divisional Officer, conjointly. For the remaining portion of the data and for the compilation of the plan Mr. E. A. Rooke, Forest Ranger, assisted.

PART I.

SUMMARY OF FACTS ON WHICH THE PROPOSALS ARE BASED.

CHAPTER I.

DESCRIPTION OF THE TRACT DEALT WITH.

Name and situation.

1. The forests of the Ambara Range are situated in the Chhindwara District, partly on the southern slopes and spurs of the Satpura hills and partly on the plain extending into the Nagpur country. It is bounded on the north by the Umreth Range; on the east by the Kanhan valley and various malguzari lands; on the south by the Nagpur District and the Berars, and on the west by the Betul District.

The nearest part of the range is within twenty miles of Chhindwara town, and the nearest forests to Nagpur are about forty miles distant. The river Kanhan flows through the northern portion of the range in an easterly direction and crosses the Nagpur-Chhindwara road at Ramakona, from which point it becomes floatable for timber and bamboos.

Configuration of the ground.

2. The height above sea-level varies from about 1,500 to 2,000 feet as the forests extend from the plain country in the south up the ghâts to the Chhindwara plateau. Practically all the forests are on the spurs of the Satpura Range, with the exception of a few isolated scattered blocks situated on more or less hilly ground in the south of the range. All aspects are represented, but the general aspects are southerly. The country is hilly and cut up by numerous ravines and nalas and is in consequence rather inaccessible

Underlying rock and soil.

3. The rock formation in the hills belong to the metamorphic and plutonic series. Trap prevails. Dykes of quartz are common and are met everywhere. Limestone and laterite are found in varying quantities. The soil is either a reddish or black loam derived from the disintegration of trap rocks and in most places intimately mixed with trap nodules.

The following classes may be noted briefly :—

(i) A black, sometimes moist, soil formed from decomposed trap and vegetable or alluvial matter found throughout the trap formations.

(ii) A sandy loam, having a larger proportion of sand of a free composition. It is generally found in the Kanhan valley and is especially adapted for teak.

(iii) A sandy-marly soil with a very much larger quantity of sand than in any other class. It is generally shallow and degraded from exposure, basing a poor forest. Disintegrated quartz forms a large feature of this class.

(iv) A clayey-laterite soil, stiff and not very fertile, supporting a stunted badly grown forest of inferior species.

Climate.

4. The climate is not quite uniform for all parts of the range. Below the ghâts it is a trifle more humid than above. The summer is considerably warmer below the ghâts and continues, both above and below, from 1st March to the break of the south-west monsoons, which usually commence about the 20th June and terminate towards the end of September. The average annual rainfall as obtained from the *Central Provinces Gazette* is 53·32 inches for the Sausar tahsil, in which sub-division almost the whole range is situated. The winter lasts from November to February.

Agricultural customs and wants of the people.

5. There are no special industries to be provided for, and though the areas adjoining the Government reserves are for the most part well populated with an agricultural community, the demand is mainly for—

(*a*) beams, posts, and rafters for building ;
(*b*) wood for agricultural implements ;
(*c*) fuel, grass for thatching and pasture ;
(*d*) bamboos for buildings ;
(*e*) thorns for fencing ;
(*f*) fibres for ropes and minor products of flowers and fruit.

There has lately sprung up a commercial demand for teak poles owing to the gradual exhaustion of the neighbouring private forests, which for many years past have supplied large quantities of this material. The private forest area still available within two miles of the perimeter of the Government reserves contains 74,098 acres (Appendix B): in the south only are these private areas in a more or less ruined condition.

CHAPTER II.

THE COMPOSITION AND CONDITION OF THE FORESTS.

Distribution and area.

6. The details are as follows :—

Serial numbers.	Names of Blocks.	Area (in acres.)	Equivalent in square miles.	Remarks.
1	Lohangi	5,581	9	Deogarh Sub-Range, area 26,020 acres.
2	Tooti	4,415	7	
3	Deogarh	3,770	6	
4	Paraspani	3,987	6	
5	Urdan Moordeye	1,081	2	
6	Khandsee	5,305	8	
7	Bhouwardo	1,158	2	
8	Barighat	723	1	

Serial numbers.	Names of Blocks.	Area (in acres).	Equivalent in square miles.	Remarks.
9	Bamla	5,389	8	Dhanora Sub-Range, area 42,742 acres.
10	Dhanora	8,768	14	
11	Mahulpani	6,388	10	
12	Pata-Pipra	9,043	14	
13	Moregondi	2,105	3	
14	Deonala	4,704	7	
15	Bundan	567	1	
16	Changoba	1,011	2	
17	Sendurjana	352	1	
18	Murkawara	486	1	
19	Jamlapani	505	1	
20	Deghori	3,424	5	
21	Gopalpur	8,499	13	Murram Sub-Range, area 37,132 acres.
22	Gajundoh	2,701	4	
23	Sutki Putki	8,902	14	
23 (a)	Borepani village	480	1	
24	Jobundera	11,270	18	
25	Kondaree	1,888	3	
26	Dhorasenur	416	1	
27	Punchal-khapa	2,976	4	
28	Umra	5,845	9	Pandurna Sub-Range, area 11,962 acres.
29	Sawajpani	1,241	2	
30	Dhoda Boregaon	198	...	
31	Kondur	634	1	
32	Waddah	1,017	2	
33	Karwar	224	...	
34	Chichghat unclassed forest	646	1	
35	Mandwi	582	1	
36	Mohi	634	1	
37	Piparpani	941	1	
	Total of Range ...	117,856	184	

State of boundaries.

7. The boundaries are either natural or artificial. In the latter case cut lines 30 to 40 feet wide are defined on the ground, and at all salient points there are serially numbered wooden posts surrounded by a cairn of boulders. The present state of the boundaries is fairly good, but the posts have to be renewed occasionally, thus incurring an

annual expenditure over some part of the total length. The length of the artificial lines to be maintained is 374 miles with 2,816 boundary marks. As the areas proposed for excision are not included in the plan, no boundary alteration will be necessary hereafter.

Legal position.

8. The forests of the Ambara Range were gazetted reserved forest in Chief Commissioner's notification No. 917 (*c*), dated the 24th February 1879. The unclassed forests noted in paragraph 6 has been notified as a proposed reserve under Section 4 of the Forest Act in *Central Provinces Gazette* Notification No. 2587, dated Nagpur, the 19th July 1898.

Rights.

9. During the last settlement no rights were found to exist in or over any of these forests, nor have any been acquired since.

Composition and condition of the crop.

10. The forests of the range are irregular and composed of a mixed tree growth of the usual species found throughout the Central Provinces.

Valleys

Teak is sometimes conspicuous, particularly in the ~~villages~~ of the Satpura hills. Salai, however, is the predominant species. The forests as a whole are decidedly of inferior quality, having suffered more than usual from the destructive influences of beva and dhaya cultivation in past years. Over considerable areas they have deteriorated almost beyond redemption and are now only fit for grazing. The tree growth is stunted and inferior in species. The common type is an open forest with the tree growth in groups consisting chiefly of coppice poles of recent origin. Reproduction from seed, owing to the want of closure to cattle and protection from fires, is poor.

The following types may be briefly indicated :—

(i) The teak types differ according to its situation. In the Lohangi felling series, where the teak is found growing in the valley of the Kanhan River, its general character is better than elsewhere, being more lofty and of larger girth, and in this situation also it is mixed with other species, such as khair, saj and lendia. Further south, in felling series Murram and Bhuli, the teak is generally found growing with salai and dhaura for its companions, but principally the former. In some parts of these areas, especially in Bhuli, the teak is very plentiful, covering the crests and slopes of nearly all the hills and spreading into valleys where these latter have escaped the plough. The species is here growing on trap, and except in regard to straight growth is not of such good character as that growing on the crystalline soils. In the west of the range, although teak is found nearly everywhere, it is as a rule very scattered and of stunted character owing to the proximity to the surface of the sheet rock, and in the scattered blocks on the extreme south of the range it is of the same character although more plentiful. The same remark is also applicable to the teak growing in the extreme north of the range on the laterite formation, where it is generally found mixed with tinsa.

(ii) The saj-lendia type is made up principally of saj, mahua, lendia, dhaura, tendu, tinsa, aonla and jamrassi. This type is usually found in low moist valleys or on fairly level areas in which the soil is generally fair to good and well drained.

(iii) The tinsa type includes, besides tinsa, lendia, achar and palas. It is found principally above the ghâts on soil consisting of a rather stiff well-drained laterite clay. The best growth is found on the lower slopes and in the valleys where these latter have not been cultivated, while the tops of the hills are lightly wooded, principally with salai.

Bamboos are fairly abundant and of good quality in the north-east and north-west of the range.

11. Of the various species that are met with in the range a few of the more important are given below:—

Teak (*Tectona grandis.*)
Bija (*Pterocarpus marsupium.*)
Saj (*Terminalia tomentosa.*)
Bahera (*Terminalia bellerica.*)
Anjan (*Terminalia arjuna.*)
Harra (*Terminalia chebula.*)
Dhaura (*Anogeissus latifolia.*)
Tinsa (*Ougeinia dalbergioides.*)
Mahua (*Bassia latifolia.*)
Lendia (*Lagerstræmia parviflora.*)
Tendu (*Diospyros melanoxylon.*)
Rohan (*Soymida febrifuga.*)
Achar (*Buchanania latifolia.*)
Khair (*Acacia catechu.*)
Salai (*Boswellia serrata.*)

Halda (*Adina cordifolia.*)
Shisham (*Dalbergia sissi.*)
Bihra (*Chloroxylon swietenia.*)
Sewan (*Gmelina arborea.*)
Gulu or kubru (*Sterculia urens.*)
Dhamin (*Grewia Tiliaefolia.*)
Gubdi or gejra (*Cochlospermum gossypium.*)
Aonla (*Phyllanthus emblica.*)
Jamrassi (*Elæodendron Roxburghii.*)
Palas (*Butea frondosa.*)
Moyen (*Odina Wodier.*)
Dhobin (*Dalbergia paniculata.*)
Ber (*Zizyphus jujuba.*)
Bas (*Dendrocalamus strictus.*)

12. Of these the two worst at present are fire and grazing, but dhaya cultivation in past years has probably been the most important cause of the present inferior condition of the forests.

Injuries to which the crop is liable.

Climbers are of infrequent occurrence and do little damage in consequence.

CHAPTER III.

SYSTEM OF MANAGEMENT.

13. Until very lately the forests in this range were under no sort of organised management; unregulated fellings were permitted. The demand for poles has not been heavy, and dry and dead material has supplied all the demand for fuel.

Past and present system of management.

Latterly a few localized fellings have been opened on the east of the range, but owing to the very bad seasons (except the season 1896-97) and the almost total stoppage of timber sales, the experiment cannot be said to have had a fair chance. Beyond this small move towards locating the fellings no sylvicultural improvements were attempted. There have been no special works of improvement, but further improvements are provided for in this plan.

Grass and minor products have been and are sold on license or under lease, whichever is more favourable.

14. Beyond a little climber-cutting by the regular establishment and recent protection from fire, no special works of improvement have been undertaken.

Special works of improvement undertaken.

15. The following tables show the revenue and expenditure for the past three years:—

Past revenue and expenditure.

Receipts.

Budget sub-heads.	1896-97.	1897-98.	1898-99.	Total.	Average.
	Rs.	Rs.	Rs.	Rs.	Rs.
R-I (*a*)	...	62	328	390	130
R-II (*a*)	...	1,912	1,365	3,277	1,092
R-II (*b*)	736	517	803	2,056	685
R-II (*c*)	1,054	326	279	1,659	553
R-II (*d*)	6,771	5,378	5,293	17,442	5,814
R-II (*e*)	815	1,337	1,669	3,821	1,274
R-II (*h*)	...	133	214	347	116
R-III	...	37	24	61	20
R-V (*c*)	...	1,420	554	1,974	658
Totals ...	9,376	11,122	10,529	31,027	10,342

Expenditure.

Budget sub-heads.	1896-97.	1897-98.	1898-99.	Total.	Average.
	Rs.	Rs.	Rs.	Rs.	Rs.
A-I (*a*)	...	18	173	191	64
A-II	1,533	1,021	1,075	3,629	1,210
A-VII (*a*)	44	36	...	80	27
A-VII (*b*)	115	...	160	275	92
A-VII (*c*)	...	...	...	...	...
A-VIII (*a*)	223	162	69	453	151
A-VIII (*f*)	515	328	289	1,132	377
A-VIII (*g*)	4	4	96	104	34
B-I (*c*)	1,668	2,398	1,997	6,063	2,021
B-II (*c*)	119	157	130	406	135
B-III (*c*)	...	...	...	...	...
Totals ...	4,220	4,124	3,989	12,333	4,111

CHAPTER IV.

UTILIZATION OF PRODUCE.

Marketable products: quantities consumed in past years.

16. The following table shows the quantities of produce sold and the number of animals that grazed during the past three years. For minor produce such as lac, mahua, achar, &c., no data is available, as the right to collect these are sold by auction for one or two years at a time :—

Description of produce.	1896-97.	1897-98.	1898-99.	Total.	Average.
Timber ... C. ft.	42,671	10,016	9,398	62,085	20,695
Fuel ... ... Tons	906	768	620	2,294	765
Grass ... ... Tons	1,743	262	17	2,022	674
Bamboos ... No.	128,373	39,698	35,707	203,778	67,926
Buffaloes ... ,,	2,951	2,643	2,619	8,213	2,738
Cows and bullocks ... ,,	36,768	31,830	32,872	101,470	33,823
Goats ... ... ,,	2,774	2,121	2,184	7,079	2,360
Sheep ... ... ,,	838	2,984	2,285	6,107	2,036

The general falling-off under all heads during 1897—1899 is accounted for by the abnormal seasons the country has passed through. It is hoped that hereafter the demand outturn may be as they were in 1896-97.

Lines of export.

17. The metalled road from Nagpur to Chhindwara passes all along the east of the range. The following lines of export are also used :—

A.—Cart-roads.

(1) From Deogarh *via* Paraspani, Meyt and Ambara to Pandurna.

(2) From Ambara *via* Bhajipani and Murram to Saosar.

(3) From Meyt *via* Borepani to Murram.

(4) From Jobi *via* Ghogri to Ramakona.

(5) From Kowria *via* Chimunkhapa, Kamptee, Deogarh, and Lohangi to Mokhair.

(6) From Ambara *via* Bhimkhera and Punchal Khapa to Mohgaon.

(7) From Bhimkhera *via* Boyari and Umra to Mohgaon.

(8) From Betul *via* Teegaon and Pandurna to Nagpur.

B.—Karas-tracks.

(9) From Baghat *via* Chindho, and Jobni to Ramakona.

(10) From Lonadevi *via* Narainghat, Dhanora and Ambara to Pandurna.

(11) From Dukerjela *via* ~~Gajnadho~~ and Harranberdi to Sausar.

(12) From Lawaghogri *via* Paraspani to the Kanhan River.

The Kanhan River, which runs through the north of the range, is occasionally used in the rains for floating down timber to Kamptee.

Markets.

18. The consumption of the forest produce is almost entirely local, but Mohkhair, Sausar, Mohgaon, Kelod, Peepla, Teegaon, Pandurna and Lodikhera, are to a small extent important centres.

Mode of extraction and its cost.

19. Produce is removed by purchasers under their own arrangements in carts, karas loads and head-loads.

Floating down the Kanhan is only resorted to during the rains by Kamptee merchants. Nothing has hitherto been exported departmentally.

The cost of felling and stacking of poles, including dressing of the stools, ~~are~~ is regulated within the following limits :—

			Rs a. p.
For 9″ poles per 100	...	...	1 0 0
„ 12″ „	...	...	1 8 0
„ 18″ „	...	...	2 0 0
„ 24″ „	...	...	3 0 0
„ 30″ „	...	...	5 0 0

The cost of felling and stacking of fuel in stacks, measuring 10′×4′×4′=160 cubic feet = 28 maunds = 1 ton, is 4 annas per stack.

Value of each class of produce.

20. The rates appended have only recently (from 1st July 1899) been enforced, as a result of carefully watching the markets during the last few years and of the gradual settling of the value of timber by supply and demand. At present there are two rates in the district—the value of produce procurable below the ghâts being raised above that of the produce procurable on the ghâts.

As the Ambara Range is practically below the ghâts these rates only are enforced in the ranges :—

Below Ghats.

For Traders and Agriculturists of the Chhindwara District.

	Length under 15′.		Length 16′ to 20′.		Length 21′ to 25′.		Length 26′ to 30′.		Length 31′ to 35′.		Length over 35′.	
	Per 100.	Each.	Per 100.	Each.	Per 100.	Each.	Per 100.	Each.	Per 100.	Each.	Per 100.	Each.
					Class I Timber.							
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
9″—12″*	12 8 0	0 2 0	15 10 0	0 2 6	17 3 0	0 2 9	18 12 0	0 3 0	20 5 0	0 3 3	...	...
13″—18″	...	...	31 4 0	0 5 0	34 6 0	0 5 6	37 8 0	0 6 0	40 10 0	0 6 6	43 12 0	0 7 0
19″—24″	...	...	62 8 0	0 10 0	75 0 0	0 12 0	81 4 0	0 13 0	87 8 0	0 14 0	93 12 0	0 15 0
25″—30″	...	...	150 0 0	1 8 0	175 0 0	1 12 0	200 0 0	2 0 0	225 0 0	2 4 0	250 0 0	2 8 0
31″—36″	...	...	...	...	250 0 0	2 8 0	275 0 0	2 12 0	300 0 0	3 0 0	350 0 0	3 8 0
37″—42″	...	...	...	...	450 0 0	4 8 0	500 0 0	5 0 0	550 0 0	5 8 0	600 0 0	6 0 0
43″—48″	...	...	...	...	625 0 0	6 4 0	700 0 0	7 0 0	750 0 0	7 8 0	800 0 0	8 0 0
4′ to 5′†	...	...	...	...	...	...	...	...	...	...	...	...
Over 5′‡	...	...	...	...	...	...	...	...	...	...	...	...
					Class II Timber.							
9″—12″§	7 13 0	0 1 3	9 6 0	0 1 6	10 15 0	0 1 9	12 8 0	0 2 0	4 1 0	0 2 3	...	...
13″—18″	...	...	15 10 0	0 2 6	18 12 0	0 3 0	20 5 0	0 3 3	21 14 0	0 3 6	25 0 0	0 4 0
19″—24″	...	...	31 4 0	0 5 0	37 8 0	0 6 0	42 3 0	0 6 9	45 5 0	0 7 3	50 0 0	0 8 0
25″—30″	...	...	62 8 0	0 10 0	75 0 0	0 12 0	84 6 0	0 13 6	90 10 0	0 14 6	100 0 0	1 0 0
31″—36″	...	...	...	...	150 0 0	1 8 0	168 12 0	1 11 0	181 4 0	1 13 0	200 0 0	2 0 0
37″—42″	...	...	...	...	275 0 0	2 4 0	250 0 0	2 8 0	275 0 0	2 12 0	300 0 0	3 0 0
43″—48″	...	...	...	...	312 8 0	3 2 0	350 0 0	3 8 0	375 0 0	3 12 0	400 0 0	4 0 0
41″ to 5′‖	...	...	...	...	...	...	...	...	...	...	...	...
Over 5′¶	...	...	...	...	...	...	...	...	...	...	...	...
					Class III Timber.							
9″—12″**	4 11 0	0 0 9	5 4 0	0 1 0	7 13 0	0 1 3	9 6 0	0 1 6	10 15 0	0 1 9	...	...
13″—18″	...	...	10 15 0	0 1 9	14 1 0	0 2 3	15 10 0	0 2 6	17 3 0	0 2 9	18 12 0	0 3 0
19″—24″	...	...	18 12 0	0 3 0	21 14 0	0 3 6	25 0 0	0 4 0	28 2 0	0 4 6	31 4 0	0 5 0
25″—30″	...	...	37 8 0	0 6 0	43 12 0	0 7 0	50 0 0	0 8 0	56 4 0	0 9 0	62 8 0	0 10 0
31″—36″	...	...	...	...	87 8 0	0 14 0	100 0 0	1 0 0	112 8 0	1 2 0	125 0 0	1 4 0
37″—42″	...	...	...	...	150 0 0	1 8 0	175 0 0	1 12 0	200 0 0	2 0 0	225 0 0	2 4 0
43″—48″	...	...	...	...	275 0 0	2 12 0	300 0 0	3 0 0	350 0 0	3 8 0	400 0 0	4 0 0
44″—5′††	...	...	...	...	...	...	...	...	...	...	...	...
Over 5′‡‡	...	...	...	...	...	...	...	...	...	...	...	...

* Any poles above 12″ girth but not longer than 15 feet will be charged for at the rates given under the next length class (16′—20′); shorter lengths of other girth will be similarly dealt with. If bark is on 1″ extra girth may be allowed.

† 10 annas per cubic foot.

‡ One rupee per cubic foot.

§ Any poles above 12″ girth but not longer than 15 feet will be charged for at the rates given under the next length class (16′—20′); shorter lengths of other girth will be similarly dealt with.

‖ 4½ annas per cubic foot.

¶ 6 annas per cubic foot.

** Any poles above 12″ girth but not longer than 15 feet will be charged for at the rates given under the next length class (16′—20′).

†† 3 annas per cubic foot.

‡‡ 4 annas per cubic foot.

Description of produce.	For Agriculturists.				For Traders.			
	Per cart-load.	Per karas-load.	Per head-load.	Remarks.	Per cart-load.	Per karas-load.	Per head-load.	Remarks.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
Green firewood, fencing wood..	0 2 3	0 1 0	0 0 2	...	0 4 0	0 1 9	0 0 3	...
Dry fuel ...	0 1 0	0 0 6	0 0 1	...	0 4 0	0 1 9	0 0 3	...
Thatching grass ...	0 4 0	0 1 9	0 0 3	...	0 4 0	0 1 9	0 0 3	...
Fodder grass ...	0 1 3	...	0 0 1	...				
Bamboos, per 100 ...	...	...	...	0 12 0	...	...	...	2 0 0
Dead bamboos ...	0 4 0	0 1 0	0 0 3	...	0 4 0	0 1 0	0 0 3	...
Charcoal ...	3 0 0	...	0 3 0	...	3 0 0	...	0 3 0	...
Bhabar grass ...	...	...	0 1 0	...	...	...	0 1 0	...
Thorns and brushwood ...	0 1 0	0 0 6	0 0 1	...	0 4 0	0 1 9	0 0 3	...
Mahal and chhind leaves ...	...	...	0 0 1½	...	...	...	0 0 1½	...
Backal ...	...	...	0 0 3	...	...	...	0 0 3	...
Salai and kulu, per cubic foot..	...	...	...	0 4 0	...	...	...	0 4 0
Sambhar horns, per horn ...	...	...	...	...	...	...	...	0 1 0

CHAPTER V.

MISCELLANEOUS FACTS.

The Forest Staff.

21. The present staff is as follows :—

Officers.	Rank of officers.	No.	Pay per mensem.
			Rs.
Range Officer	Deputy Ranger ...	1	40
Sub-Range Officer	Forester ...	1	25
Do.	Senior Forest Guard ...	1	12
Do.	Do. ...	1	10
Do.	Temporary Forest Guard.	1	10
Beat Guards	Forest Guards ...	4	8
Do.	Do. ...	9	7
Do.	Do. ...	5	6
Do.	Temporary Guards ...	1	6
Do.	Do. ...	4	5

There are ten license-vendors paid by commission who serve this range.

To assist the permanent staff eight fire-guards are employed during the hot weather on fire-protection.

Labour supply.

22. The supply of labour is not always procurable to the extent that it is required. It is only during the slack agricultural seasons that labour is at all plentiful.

PART II.
FUTURE MANAGEMENT DISCUSSED AND PRESCRIBED.

CHAPTER VI.

BASIS OF PROPOSALS.

Working Circles how composed; reasons for their formation.

23. The Ambara Range will be divided into four working circles as follows :—

Number and name of Working Circles.	Name of felling series.	Name of forest blocks.	Area of forest block.	Total.	Remarks.
			Acres.	Acres.	
I.—Ambara ...	Lohangi ...	Lohangi ...	5,581		
		Tooti ...	4,415		
		Barlghat ...	723	10,719	
	Murram ...	Jobundera ...	11,270	11,270	
	Bhuli ...	Punchalkhapa ...	2,976		
		Umra ...	5,845		
		Sawajpani ...	499	9,320	
II.—Mandwi ...	Mandwi ...	Mandwi ...	582		
		Piparpani ...	941	1,523	
III.—Unworkable ...	Pata-Pipra ...	Pata-Pipra ...	9,043	9,043	
IV.—Grazing ...	Grazing ...	Urdan Moredeye ...	1,081		
		Deogarh ...	3,770		
		Paraspani ...	3,987		
		Khandsi ...	5,305		
		Bhonwardho ...	1,158		
		Gopalpur ...	8,499		
		Gujundoh ...	2,701		
		Sutki Putki ...	8,902		
		Mahalpani ...	6,388		
		Dhanora ...	8,768		
		Bamla ...	5,389		
		Deghori ...	3,424		
		Jamlapani ...	505		
		Murkawara ...	486		
		Sendarjana ...	352		
		Changoba ...	1,011		
		Bundan ...	567		
		Deonala ...	4,704		
		Morgondi ...	2,105		
		Kondari ...	1,888		

Number and name of Working Circle.	Name of felling series.	Name of forest blocks.	Areas of forest block.	Total.	Remarks.
			Acres.	Acres.	
IV.—Grazing.—(*Concld.*)	Grazing.—(Concld.)	Dhorasemar ...	416		
		Sawajpani ...	742		
		Dhodha Boregaon ...	198		
		Kondur ..	634		
		Waddha ..	1,017		
		Karwar ...	224		
		Chichghat ..	646		
		Mohi ..	634		
		Borpani forest village.	480	75,981	
		Total of range ...	...	117,856	

The above areas have been obtained by a most careful calculation from the best map at present available. Though these forests were surveyed in 1898-99 by the Forest Survey Department maps have not yet been received, and consequently the correct area of the range is not available.

24. Working Circles I and II, on which only there is at present an appreciable demand, will be worked over systematically for poles, especially teak poles, and for fuel if a demand arises for this latter; while Circle III will not be worked during the present rotation, owing to its present inferior condition. Circle IV, otherwise the grazing circle, will also not be worked during the present rotation, but unregulated fellings may be allowed in this circle at the discretion and by the special permission of the Divisional Officer to supply the small requirements, when necessary, of the widely scattered villages in the neighbourhood, but no fellings here should be allowed for trade purposes. This circle will be kept permanently open for grazing.

Justification of the sub-division adopted.

25. In Circle No. I there is a fair quantity of teak for which at present there appears to be a demand, but the species is not uniformly distributed and almost everywhere the forest is intermixed with considerable blanks, the result of former agricultural operations. It is necessary, therefore, to put aside relatively large areas in order to obtain a fairly good outturn, and as there is only a limited quantity of forest which is at present fit for felling over, it will be necessary to limit the rotation to 20 instead of 30 years, which is generally fixed for these provinces. Fortunately this can be done without inconvenience to the neighbourhood owing to the very large areas of private waste attached to almost all the villages in the locality of the reserves, and the herds of which, therefore, will not be badly affected by the ultimate closure to grazing of half the total area of this circle which will be the necessary result of a 20 years' rotation.

It seems also well that the improvement anticipated by felling over the badly grown teak should be carried out within as short a period as existing conditions will admit. These three felling series therefore have each been divided into 20 compartments, one of which will be worked over each year of the rotation. The local demand for building wood of miscellaneous kinds and for green fuel is not at present of great magnitude.

Para 26.

(add after "Separate circle" in 3rd line)
This Circle contains 5 Coupes. Two are situated in the Mandvi block and are to be felled in 1902-03 and 1903-04 respectively and three are in the Piparpani block and are to be felled in 1918-19, 1919-20, and 1920-21 respectively.

27. The average size of the coupes ...

			Acres.
Lohangi	...	...	536
Murram	...	...	563
Bhuli	...	...	466
Mandwi	...	...	305
			1,870 during 5 years of rotation.
			1,565 during rest of rotation.

28. The system proposed for working the bamboo areas has never been tried in this district before, but it is hoped that every endeavour will be made to encourage its adoption, as the present crude methods are fast destroying the bamboo. The bamboo is a greatly sought after and a much valued product in this district. Statistics show the gradual decrease of bamboo sales, which is due not only to the recent agricultural distress but to its scarcity owing to the congested condition of the clumps. It is proposed that the whole bamboo tract be open annually for extraction. Before this area is fit to face these annual cuttings, a cleaning is first essential, made over fixed areas, as the whole is too large to be taken in hand at once. This cleaning which must be done departmentally is best attained in the following way :—

(1) By cutting one-third of the total number of culms in every clump in such a manner that the remainder of the bamboo will stand apart from one another all over the clumps and thus allowing of each individual being reached and cut without injury to the rest. This one-third will at first embody dry wood, old stumps, and twisted and crooked culms.

(2) No bamboo should be cut at more than 6 inches above ground or above the first internode.

(3) One year old culms should not as a rule be cut.

(4) As each area is cleaned it will be thrown open for annual thinnings, otherwise a relapse into congestion will result.

In order not to interfere with the annual demand the bamboo tract has been divided into two circles, one to be felled in a triennial rotation and the other is divided into nine sub-blocks. The order of their working is best explained in the tabulated statement attached to para. 38 of this plan.

Analysis of the crop; method of valuation adopted.

29. The area check being adopted, no detailed analysis or valuation has been considered necessary.

* NOTE —It may be noted that the sum of Rs. 1,626 was eventually recovered from the people concerned in this unauthorized felling and the subordinate in charge was prosecuted and punished.

CHAPTER VII.

METHOD OF TREATMENT.

Object sought to be attained.

30. The objects sought are—

(1) To obtain as quickly and as simply as possible a well-stocked forest of good growth from seed and stool.

(2) To increase the density of the present poorly stocked forests. It is also desired to protect the forests from the injuries they have been hitherto exposed to.

(3) To supply all local requirements of the agricultural population and teak poles to Kamptee traders.

Method of treatment.

31. The method of improvement fellings of varying intensity to suit local conditions and the demand has been adopted as that most suitable for Working Circles I and II. The reasons for its adoption are—

(*a*) The bad character of the crop.

(*b*) The present limited demand for produce.

All compartments of these circles shall be protected from cattle for 10 years after being felled over and shall be permanently protected from fire.

Circle III, as above-mentioned, will be subjected to close protection from fire, cattle and green timber and fuel fellings for the full working period, but will be open for the removal of dry fuel, grass and minor forest produce.

Circle No. IV will be open throughout the rotation for grazing and for the removal of dry fuel, grass and minor forest produce and for the few unregulated fellings it may be necessary to allow for the supply of certain scattered villages as noted in para. 24. Partial protection from fire should be extended to this circle at the discretion of the Forest Divisional Officer.

Para 32.

" (add at the end of para.)
Should there not be at the End of 20 years as the result of coppicing a sufficient quantity of 18" poles for the supply of the market, the balance required may be obtained from the standards which were left at the beginning of the rotation."

obtained, it would appear that we are justified in estimating an averag[illegible] over the above areas of 13 poles per acre, or a total estimated outturn of 20,345 poles.

It is also estimated that two tons of green fuel per acre could be obtained in the event of a demand arising for this produce or a total outturn of 3,130 tons annually.

26. Circle II consists of two small blocks in the south-west of the range, both of which contain considerable quantities of poorly grown teak and which it is considered most convenient to treat as a separate circle. One of these blocks (Piparpani) was illicitly felled over in the famine year 1897 by a large number of Gonds, who there is reason to believe thought that the famine concession relating to fuel and grass also included timber, and who acting under this impression felled all the exploitable teak in this block.* As regards this area, therefore, the plan will prescribe permanent protection from fire and close protection ~~for~~ cattle from until the year 1909 and protection from felling until the last but three years of the rotation fixed for Circle I. For the Mandwi block of this small circle, comprising coupes 1 and 2, it will be sufficient to prescribe that they be felled over in sequence at the commencement of the rotation and subsequently protected in the same manner as the above-mentioned area. Working Circles III and IV will not be divided into compartments during the present rotation.

27. The average size of the coupes is shown below :—

	Acres.
Lohangi	536
Murrami	563
Bhuli	466
Mandwi	305
	1,870 during 5 years of rotation.
	1,565 during rest of rotation.

28. The system proposed for working the bamboo areas has never been tried in this district before, but it is hoped that every endeavour will be made to encourage its adoption, as the present crude methods are fast destroying the bamboo. The bamboo is a greatly sought after and a much valued product in this district. Statistics show the gradual decrease of bamboo sales, which is due not only to the recent agricultural distress but to its scarcity owing to the

divided into nine sub-blocks. The order of their working is best explained in the tabulated statement attached to para. 38 of this plan.

Analysis of the crop; method of valuation adopted.

29. The area check being adopted, no detailed analysis or valuation has been considered necessary.

* Note —It may be noted that the sum of Rs. 1,626 was eventually recovered from the people concerned in this unauthorized felling and the subordinate in charge was prosecuted and punished.

CHAPTER VII.

METHOD OF TREATMENT.

Object sought to be attained.

30. The objects sought are—

(1) To obtain as quickly and as simply as possible a well-stocked forest of good growth from seed and stool.

(2) To increase the density of the present poorly stocked forests. It is also desired to protect the forests from the injuries they have been hitherto exposed to.

(3) To supply all local requirements of the agricultural population and teak poles to Kamptee traders.

Method of treatment.

31. The method of improvement fellings of varying intensity to suit local conditions and the demand has been adopted as that most suitable for Working Circles I and II. The reasons for its adoption are—

(*a*) The bad character of the crop.

(*b*) The present limited demand for produce.

All compartments of these circles shall be protected from cattle for 10 years after being felled over and shall be permanently protected from fire.

Circle III, as above-mentioned, will be subjected to close protection from fire, cattle and green timber and fuel fellings for the full working period, but will be open for the removal of dry fuel, grass and minor forest produce.

Circle No. IV will be open throughout the rotation for grazing and for the removal of dry fuel, grass and minor forest produce and for the few unregulated fellings it may be necessary to allow for the supply of certain scattered villages as noted in para. 24. Partial protection from fire should be extended to this circle at the discretion of the Forest Divisional Officer.

Exploitable age.

32. The poles most in demand locally vary from 12″ to 18″ in girth, and it is considered that such produce for the most part can be obtained by the rotation of 20 years coupled with the protection from cattle for 10 years prescribed in this plan; but should it be proved that this rotation is too limited to yield poles of the larger size, it must be borne in mind that a large proportion of the present stock will remain on the ground as stores for purposes of future development, and that, therefore, at the close of 20 years there will probably be ample material for supplying the demand under this head.

CHAPTER VIII.

THE FELLINGS.

The general working scheme; calculation of the possibility.

33. The general scheme is to fell over Circle I in 20 years and Circle II in 5 years, to keep No. III closed for this rotation, and to keep open for permanent grazing Circle No. IV. According to details given in para. 27, 1,565 acres will be felled over annually. From localized fellings carried out in recent years in the Ambara Range in various centres, over 384 acres, from which 4,841 poles were obtained, it would appear that we are justified in estimating an average outturn over the above areas of 13 poles per acre, or a total estimated outturn of 20,345 poles.

It is also estimated that two tons of green fuel per acre could be obtained in the event of a demand arising for this produce or a total outturn of 3,130 tons annually.

In para. 16 of this report it is shown that the average annual demand in the range has been 20,695 poles and 765 tons of fuel. It is therefore evident that the estimated average outturn of the felling series is not far short of the demand.

Period for which the fellings are prescribed.

34. ~~The period prescribed for working over Circle I is 20 years and for Circle II 5 years~~. It is proposed that the provisions of this plan be enforced from the year 1901-1902.

Fellings to be annual or periodical.

35. The compartments will be felled over annually in regular sequence as shown in the attached map and as indicated in the tabulated statement under para. 38 of this plan.

Nature and mode of executing fellings: ~~forecast of conditions of crop at their conclusion~~.

36. The following prescriptions should be observed:—

(*a*) Pole fellings, at least of teak, should be carried out for the first few years by departmental agency: subsequently, when departmental methods came to be understood, felling may be executed at the discretion of the Divisional Officer by the purchasers themselves. Green fuel may be felled by the purchasers flush with the ground under supervision.

(*b*) The outside limits of the first five compartments in each felling series must be demarcated before the commencement of each quinquennial period. When five compartments have already been worked, it will be necessary to demarcate on the ground the outside limits of the next five compartments or of the first ten compartments and so on, the demarcation of the whole series being undertaken in groups of five compartments. By this means any risk of felling over larger or smaller areas than are appointed in the working-plan is considerably reduced. The manner of demarcation should be indicated by cut lines 10 feet wide and marked at all angles with "munaras," or where stones are not available by ditches and ridges.

(*c*) All the trees within the compartments that are to be reserved should be clearly marked with a ring of paint, whitewash or ~~green~~. These reserves should, when the density of the crop permits it, never be less than 60 per ~~cent.~~, but may vary in excess of this number according to the demand. Trees of good quality of teak, bija, shisham, tinsa, khair, lendia, dhaura, tendu, and ain, that are growing straight from the ground should not be felled, and as large a proportion of such trees as is compatible with the demand should be preserved.

(*d*) No fellings should be made for a breadth of one chain along outer boundaries, rivers, main roads, ravines or extensive blank maidans. All fellings should be made flush with the ground and the stools cleared of brushwood or other impediments.

(*e*) Fellings should be very light or, if practicable, avoided altogether on the crests of hills.

(*f*) Seedlings and saplings of valuable species that are suppressed by inferior kinds should be freed, or if of bad growth, cut back. Useless trees like salai, moyen, dhobin, goorlu, if not required for cover should be girdled and not felled. All climbers should be cut out.

(*g*) The pole outturn should be classified and stacked. Fuel should be collected into stacks of 160 cubic feet or one ton.

(*h*) The compartment exploited should be carefully isolated from the surrounding forest by a sufficiently wide burnt line.

37. It is expected that on the expiry of the rotation prescribed, and if the prescriptions of this plan have been duly carried out, there will be a healthy mixed pole forest with a proportion of larger trees of desirable species represented by the reserves growing for the most part straight from the ground instead of from old stumps several feet above ground as at present. The composition of forest will also have improved, and as a result of protection the number of seedlings will have increased.

Tabular statement of the fellings to be made.

38. The following tabular statement gives the felling allotted to each year for each circle:—

Area of Range, 184 *square miles.*

Year of working.	Working Circle, Ambara No. I.					Working Circle, Mandwi No. II.		Unworkable Circle.	Grazing Circle.
	Number of coupes	Felling series Lohangi.	Felling series Murram.	Felling series Bhuli.	Total area of coupes of working circle.	Number of coupes.	Felling series Mandwi.		
		Area in acres.					*Area in acres.*		
1901-1902 ...	1	396	634	281	~~1,301~~ 1311	...	...		
1902-1903 ...	2	384	467	313	1,164	1	352		
1903-1904 ...	3	384	505	563	1,452	2	230		
1904-1905 ...	4	416	525	614	~~1,555~~ 1555	...	...		
1905-1906 ...	5	320	512	505	1,337	...	...		
1906-1907 ...	6	570	493	518	1,581	...	...		
1907-1908 ...	7	493	448	446	1,387	...	...		
1908-1909 ...	8	384	678	499	1,561	...	...		
1909-1910 ...	9	550	589	403	1,542	...	...		
1910-1911 ...	10	512	736	382	1,630	...	...	9,043	75,981
1911-1912 ...	11	422	576	576	1,574	...	...		
1912-1913 ...	12	729	470	407	1,606	...	...		
1913-1914 ...	13	519	493	311	1,323	...	...		
1914-1915 ...	14	576	490	486	1,552	...	...		
1915-1916 ...	15	410	678	761	~~1,859~~ 1849	...	...		
1916-1917 ...	16	729	627	416	1,772	...	...		
1917-1918 ...	17	800	685	409	1,894	...	...		
1918-1919 ...	18	788	656	426	1,870	3	390		
1919-1920 ...	19	870	493	458	1,821	4	263		
1920-1921 ...	20	467	515	546	1,528	5	288		
Total ...	...	10,719	11,270	9,320	31,309	...	1,523	9,043	75,981

Bamboo fellings.

Year.	AREA OPENED FOR CUTTING.			
	By Department.		By Purchaser.	
	No. of coupe.	Area in acres.	No. of coupe.	Area in acres.
1901-1902	A-I.	1,556	D.	6,028
			A-II and A-III.	4,385
1902-1903	B-I.	1,126	E.	11,584
			A-I.	1,556
			B-II and III.	2,284
1903-1904	C-I.	2,610	~~E.~~ F	3,987
			A-I.	1,556
			B-I.	1,126
			C-II and III	2,886
1904-1905	A-II.	2,388	D.	6,028
			A-I and III.	3,553
			B-I.	1,126
			C-I.	2,610
1905-1906	B-II.	979	E.	11,584
			A-I and II.	3,944
			B-I and III.	2,431
			C-I.	2,610
1906-1907	C-II.	1,530	F.	3,987
			A-I and II.	3,944
			B-I and II.	2,105
			C-I and III.	3,966
1907-1908	A-III.	1,997	D.	6,028
			A-I and II.	3,944
			B-I and II.	2,105
			C-I and II.	4,140
1908-1909	B-III.	1,305	E.	11,584
			A.	5,941
			B-I and II.	2,105
			C-I and II.	4,140
1909-1910	C-III.	1,356	F.	3,987
			A.	5,941
			B.	3,410
			C-I and II.	4,140
1910-1911			D.	6,028
			A.	5,941
			B.	3,410
			C.	5,496

and so on, Compartments A, B and C being open annually and Compartments D, E and F in the triennial rotation.

CHAPTER IX.

SUPPLEMENTARY REGULATIONS.

~~39. At present the necessity for such operations is not anticipated; should it be found to exist later on steps should be taken to have them carried out.~~

Cleanings, thinnings and other improvement fellings.

39 ~~40.~~ No grazing rights exist in this range. The statement under para. 16 illustrates the grazing demand of the past three years. Hitherto grazing has been nearly unrestricted throughout the range, but it is necessary, for the maintenance and improvement of the forest, that this privilege should be gradually curtailed.

Grazing and other rights.

Grazing will, therefore, be disallowed for ten years in Circle No. I in those compartments that have been felled over. The whole Circle II will be closed to grazing till the year 1910 and for the period of this rotation cattle will be prohibited in Circle III. Thus the minimum area that will be eventually open to grazing is represented by half of Circle I, 15,654 acres, and the whole of Circle IV, 75,981 acres, equal to 91,635 acres.

It has been shown above that annually about 36,561 buffaloes and oxen are dependent on the forest for grazing. It follows, therefore, that the open area will supply 2·5 acres per head. In addition to the grazing supplied by the Government forests, it will be seen from the statement attached to this report as Appendix B, that the villages in the immediate neighbourhood lying within two miles of the range in all directions possess waste lands aggregating 74,098 acres. Moreover, in the hot weather it is customary for the people to send all their milch cattle and part of their surplus stock to Mandla and Balaghat for the superior pasture found in those districts. Goats will be excluded from Circles I, II and III and will be confined to the grazing circle only.

40 ~~41~~. Improvement common to the whole area. Up to date part of the range aggregating 23 square miles have been brought under fire protection for the first time, and the remainder of the range will be gradually placed under this treatment during the next five years. But it shall be discretional with the Divisional Officer whether the form of protection applied shall be special or partial. As a general rule only the latter kind of protection should be applied to ~~acres~~ outside the ~~following~~ felling circles.

41 ~~42~~. Roads. The difficult nature of the country and stoniness of the soil necessitate annual repairs to all cart tracks. The outlay on these need not at any time be heavy, as beyond filling up ruts, removing stones, improving the nala crossings, &c., nothing more substantial is required. Repairs need only be confined to all roads and karas tracks tapping the ~~following~~ felling circles and bamboo blocks.

42 ~~43~~. Buildings. There are four sub-ranges and 20 beat guards. At the head-quarters of each of the sub-ranges more substantial and commodious buildings than there are at present should be constructed. Beat guards' nakas should be built of a more durable character. The Range Officer's quarters were only lately constructed and are adequate for the purpose.

CHAPTER X.

MISCELLANEOUS.

Miscellaneous prescriptions. 43 ~~44~~. Prescribed codal forms 2, 3 and 33 will be kept up for each circle separately.

44 ~~45~~. Changes proposed in the Forest Staff. For several years an attempt was made to combine this range with the Sillewani Range, but the charge being too large to be managed satisfactorily, it led to disastrous results. Since March 1899 the Ambara Range has been held by a separate officer. Forest Guards act as Sub-Range Officers. These should when circumstances permit be replaced by Foresters. No changes are proposed among the Forest Guards.

45 ~~46~~. Financial results of the proposed working. The estimated receipts for timber and fuel are based on the present rates, *vide* para. 20 of this plan; those for bamboos on the average sales of previous years, so also for drift-wood, minor produce, grazing and grass :—

Estimated Receipts.

	Rs.
10,172 teak poles, excluding fellings, at Rs. 12-8-0 per 100.	1,270
10,173 miscellaneous poles at Rs. 6-4-0 per 100 ...	635

6

Estimated Receipts.—(Concld.)

	Rs.
2,365 tons green fuel at Re. 0-6-0 per ton ...	887
765 tons dead picked up fuel at Re. 0-3-0 per ton...	143
33,950 bamboos at Rs. 2 per 100	678
33,950 do. at Re. 0-12-0 per 100 ...	254
Drift-wood	25
Minor produce	1,106
Grazing, 40,957 heads	5,814
Grass, 675 tons	168
Total ...	10,980

Estimated Expenditure.

Cost of felling and dressing 10,172 teak poles at Rs. 2 per 100.	203
[illegible] miscellaneous	150

Cost of Establishment.

—"—

The Establishment is always changing owing to transfers from Range to Range & from Division to Division also to deaths, dismissals, resignations and sanctions.

The present staff is as follows:-

			Rs
Range Officer, Dy Ranger	1 on	... ...	40/-
Sub Range Officer, Jemadar	1 on	... ...	20/-
—Do— Forest Guard	1 on	... ...	12/-
—Do— —Do—	1 on	... ...	10/-
—Do— Dafedar	1 on	... ...	10/-
Beat Guards Forest Guards	2 on	... ...	8/-
—Do— —Do—	2 on	... ...	7/-
—Do— —Do—	4 on	... ...	6/-
—Do— —Do—	14 on	... ...	5/-
Range Mohanir	1 on	... ...	10/-
Range Orderly	1 on	... ...	5/-
Total monthly cost Rs			231

46 47. It is to be remembered that the principles advocated by the Inspector-General of Forests in his Circular No. 12-W. P., dated the 29th October 1894, are to be followed in the case of departures from the prescriptions of this plan under—

(*a*) Works of sylvicultural improvements.

(*b*) Works connected with lines of communications and export.

(*c*) Buildings, demarcations, and minor works of improvement.

These principles are that in the case of works under (*a*) or (*b*), such for instance as creeper-cutting, not being carried out in the years to which they are allotted, the Conservator should have power to sanction such deviation, giving his reasons in Form 3. In the case of works under (*c*) that the general plan may be prescribed for a term of years, but that the manner in which the details are carried out should be controlled solely by the Conservator.

APPENDICES.

47-48. One map (Appendix A), accompanies this report on the 1-inch= 1 mile scale. The accuracy cannot be guaranteed, but it is a correct tracing of the best maps available. A statement also accompanies showing the areas of the private forests within two miles of the boundaries of the Government forests (Appendix B).

A summary of the provisions of the plan is appended (Appendix C).

J. J. HOBDAY,

Forest Divisional Officer,

Chhindwara Division.

Estimated Receipts.—(Concld.)

	Rs.
2,365 tons green fuel at Re. 0-6-0 per ton ...	887
765 tons dead picked up fuel at Re. 0-3-0 per ton...	143
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Drift-wood	25
Minor produce	1,106
Grazing, 40,957 heads	5,814
Grass, 675 tons	168
Total ...	10,980

Estimated Expenditure.

Cost of felling and dressing 10,172 teak poles at Rs. 2 per 100.	203
Trimming stools and cutting back of miscellaneous poles.	150
Repairs to roads	150
Construction of and repairs to buildings ...	200
102·75 Fire-protection eventually 1,027·5 square miles at Rs. 12 per square mile.	~~1,530~~ 1233
Maintenance of boundaries and marks ...	150
Chimbers cutting	40
Bamboo thinning and cleanings	100
Total ...	~~2,523~~ 2226

Cost of Establishment.

	Rs.
Deputy Ranger's pay at Rs. 40 per mensem ...	480
One Forester at Rs. 20 per mensem... ...	240
Two Foresters at Rs. 15 per mensem ...	360
One temporary senior Guard at Rs. 10 per mensem ..	120
Eleven Forest Guards at Rs. 7 per mensem ...	924
Nine Forest Guards (temporary) at Rs. 5 ..	540
Total ...	2,664
Add expenditure under A ...	~~2,523~~ 2226
Grand Total ...	~~5,187~~ 4890
Net surplus ...	~~5,793~~ 6090

46 47. It is to be remembered that the principles advocated by the Inspector-General of Forests in his Circular No. 12-W. P., dated the 29th October 1894, are to be followed in the case of departures from the prescriptions of this plan under—

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APPENDICES.

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A summary of the provisions of the plan is appended (Appendix C).

J. J. HOBDAY,

Forest Divisional Officer,

Chhindwara Division.

APPENDIX. B.

List of Malguzari villages within two miles of the Government Reserves of the Ambara Range.

Number.	Name of village.	Area of waste land (in acres).	Number.	Name of village.	Area of waste land (in acres).
1	Mohkhair	167·97	33	Kondari	418·60
2	Urdan	139·82	34	Chabri	637·67
3	Marodeya	229·32	35	Dukerjela	487·62
4	Lohangi	1,120·14	36	Dhonora	675·29
5	Karithuni	1,305·71	37	Uttamdera	407·45
6	Deogarh	349·07	38	Dholumkhapa	978·10
7	Paraspani	514·93	39	Sonpathar	1,032·57
8	Burighat	633·09	40	Chikli	226·07
9	Chindlo	1,092·23	41	Jamghat	382·53
10	Jobni	453·71	42	Patheye	389·05
11	Khapa	1,682·66	43	Kowria	840·30
12	Ambajhiri	291·04	44	Chimankhapa	754·88
13	Shazi	386·00	45	Lonadevi	426·15
14	Silora	295·45	46	Per-Aser	921·86
15	Koprawari	121·25	47	Minakhapa	591·00
16	Peepla	694·06	48	Bamla	441·26
17	Paraspani	514·93	49	Kampti	2,608·07
18	Mundipar	52·30	50	Govindwari	956·51
19	Harrunbardi	720·64	51	Mundikhera	115·28
20	Karli	1,444·32			
21	Murram	710·60		Total ...	34,483·53
22	Jamlapani	1,820·56			
23	Nundiwani	2,009·24	52	Ambara	429·21
24	Surkikhapa	505·05	53	Nandunwari	249·73
25	Moongapani	1,051·81	54	Bundan	373·47
26	Ambakhapa	33·53	55	Pitheyr	128·81
27	Panchalkhapa	648·15	56	Changoba	668·65
28	Siliwani	740·59	60	Nursura	861·50
29	Dudiwani	369·48	61	Deghori	291·47
30	Bhajipani	664·96	62	Salai	349·19
31	Biroli or Burchidar ...	214·20	63	Jamlapani	288·61
32	Sawajpani	216·51	64	Murkwara	586·75

APPENDIX B.—(*Concld.*)

Number.	Name of village.	Area of waste land (in acres).	Number.	Name of village.	Area of waste land (in acres).
65	Sendurjana	647·81	95	Mandwi	1,331·95
66	Raj Dongri	860·97	96	Gorlea Khapa	130·65
67	Deonala	674·44	97	Chikli	149·56
68	Sirata	1,102·36	98	Mohi	877·04
69	Taimni	468·33	99	Bargaon	1,296·38
70	Gaikhuri	180·17	100	Piparpani	1,363·43
71	Mongondi	130·80	101	Bichwa	320·10
72	Boochu Khapa	440·97	102	Chutwa	412·89
73	Raibasa	220·46			
74	Ghogri	386·00		Total ...	5,882·00
75	Meyt	574·93	103	Dola Bargaon	988·48
76	Pata Pipra	720·81	104	Sitapar	70·75
	Total ...	10,635·44	105	Kondur	23·85
			106	Wagholi	320·76
77	Bhuli	641·96	107	Chicholi	1,845·05
78	Dhowri Khapa	905·81	108	Hewra	1,967·42
79	Boeyari	1,132·13	109	Taimni	162·88
80	Khirki	459·32	110	Waddah	542·08
81	Khiridan	654·03	111	Rajura Khapa	389·40
82	Pursoli	405·73	112	Sonegaon	2,055·36
83	Markawara	138·08	113	Kurwar	494·99
84	Kalapata	387·48	114	Durimete	142·76
85	Lendori	362·37	115	Malegaon	150·50
86	Bhimkeri	538·87	116	Pardi	100·95
87	Gurmoh	743·67	117	Gajurkhera	231·45
88	Belgaon	38·08	118	Junapani	190·61
89	Rajari Pipla	1,196·77	119	Chichghat	713·20
90	Saonghi	663·17	120	Amba Khapa	33·53
91	Pindreye	549·99	121	Lohana	950·37
92	Chirkotagondi	1,211·74	122	Rajula Kalan	819·79
93	Sawajpani	216·51	123	Dohoda	137·51
94	Umra	110·12	124	Baradevi	409·96
				Total ...	12,741·65
	Total ...	10,355·83		GRAND TOTAL ...	74,098·5

APPENDIX C.

SUMMARY OF THE PROVISIONS OF THE PLAN.

(i) Working Circle No. I.

1. The general scheme is to fell over the Circle in 20 years.
2. The provisions of the plan will be brought into force from the year 1900-1901. —— 1901-1902
3. One compartment from each felling series will be felled over annually as per statement in para. 38.
4. The fellings will be made with the object of improving the character of the crop.
5. All climbers should be cut out from the compartment open for the year.
6. Each compartment, as felled over, will be closed to grazing for a period of 10 years.
7. Each compartment, as worked over, will be protected from fire. The entire Circle should be under systematic fire-protection within the next five years.
8. Improving road as required facilitating the removal of forest produce. 1902

(ii) Working Circle Mandwi.

1. The general scheme is to fell over the Circle in five years, and to be closed to all fellings thereafter.
2. The provisions of the plan will be enforced from the year 1901-1902.
3. One compartment will be felled over annually as per statement in para. 38.
4. The fellings will be made with the object of improving the character of the crop.
5. Climbers will be cut out annually from the whole Circle.
6. The whole Circle should be closed to grazing till the year 1909.
7. The whole Circle will be permanently protected from fire.
8. Collection of minor forest produce and of fallen dead wood will be permitted.

(iii) Unworkable Circle.

1. Closed to all fellings.
2. Open to the removal of dead wood picked up from the ground, to cutting of grass, and to the collection of minor produce.
3. All climbers to be annually cut out.
4. Closed to grazing till the year 1920.
5. Will be protected from fire permanently. The entire Circle will be gradually taken up in ~~this~~ the next five years.

(iv) Grazing Circle.

1. Open to unregulated fellings for local requirements at the discretion of the Divisional Officer.
2. Open to the removal of dry fuel, grass, grazing, and minor forest produce.
3. Parts of the Circle will be placed under partial fire-protection.

(v) Bamboo Circle.

1. Divided into two Circles for separate treatment as per paras. 28 and 38.
2. Fire-protection will only be extended to such parts of these Circles as fall within Circle I.
3. Close protection from grazing will only be allowed to so much of the Circle as falls within the annual felling areas.

(vi) The whole Range.

1. Roads will be improved for facilitating the removal of forest produce.
2. Quarters will be built for the Range subordinates.

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Chhindwara Division.

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